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SUGHRUE MION, PLLC				
2100 PENNSYLVANIA AVENUE, N.W.				
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EXAMINER				
DAHIMENE, MAHMOUD				
ART UNIT		PAPER NUMBER		
1713				
NOTIFICATION DATE		DELIVERY MODE		
05/10/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/501,265

Applicant(s)

AKIBA ET AL.

Examiner

MAHMOUD DAHIMENE

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/22)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what the newly added limitation of "not subjecting the fibers to a drying step" means when no degree of dryness or wetness is claimed by the applicant. Claim 1 is incomplete for omitting an essential step, such omission amounting to a gap between the steps. See MPEP § 2172.01.

3. Applicant's invention, as claimed in claim 1, offers two possible interpretations:
 - (a) the said electret article is partially wet after the manufacturing process, as claimed, is performed.
 - (b) the said electret article is completely dry after the manufacturing process, as claimed, is performed.

In the event applicant claims the said electret article is partially wet after the manufacturing process as claimed, then, not subjecting the article to a drying step would be obvious over the cited prior art of record.

In the event applicant claims the said electret article is completely dry after the manufacturing process, as claimed, a process step (or limitation), describing how an

article which has been through a mist of liquid droplets can be dry at the end of the process without going through a drying step, is missing.

For the purpose of the examination, the examiner interprets applicant's method of claim 1 to yield an article that is not completely dry at the end of the claimed process.

4. Claim 4 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4, which depends on claim 1, appears to contradict claim 1, because claim 4 requires a "heated gas" is blown, while claim 1 requires no drying step.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Angadjivand et al. (US 6,375,886) in view of Cinar et al. (Applied Scientific Research, V 50 (1) pages 1-9, 1998).

Angadjivand discloses a method and apparatus for charging fibers that contain a nonconductive polymer. A polar liquid 32, 34 is sprayed onto free-fibers 24, and the free-fibers 24 are then collected to form an entangled nonwoven fibrous web 25 that may contain a portion of the polar liquid. The nonwoven web 25 is then dried 38. By applying an effective amount of polar liquid 32, 34 onto the nonconductive free-fibers 24 before forming the nonwoven web 25, followed by drying 38, the individual fibers 24 become charged. The method and apparatus enable the fibers 24 to be charged during web manufacture without subsequent processing (abstract). Angadjivand cites "The spraying mechanisms 28, 30 may be used separately or simultaneously from multiple sides. The spraying mechanisms 28, 30 may be used to spray a vapor of polar liquid such as steam, an atomized spray or mist of fine polar liquid droplets, or an intermittent or continuous steady stream of a polar liquid. In general, the spraying step involves contacting the free fiber with the polar liquid by having the polar liquid supported by or directed through a gas phase in any of the forms just described. The spraying mechanisms 28, 30 may be located essentially anywhere between the die 20 and the collector 26. For example, in an alternate embodiment shown in FIG. 1, spraying

mechanisms 28', 30' are located closer to the collector and even downstream to a source 36 that supplies staple fibers 37 to the web 25. (15) Spraying the free-fibers while they are in a molten state or in a semi-molten state has been found to maximize the imparted charge. The spraying mechanisms 28, 30 are preferably located as close to the stream of free-fibers 24 as possible (distances e and f are minimized), without interfering with the flow of free-fibers 24 to the collector 26. The distances e and f are preferably about 30.5 cm (one foot) or less, more preferably less than 15 cm (6 inches), laterally from the free fiber. The polar liquid may be sprayed perpendicular to the stream of free-fibers or at an acute angle, such as at an acute angle in the general direction of free-fiber movement" (column 7, line 40-65), "The polar liquid is sprayed on the fibers in quantities sufficient to constitute an "effective amount." That is, the polar liquid is contacted with the free-fibers in an amount sufficient to enable an electret to be produced using the process of the invention. Typically, the quantity of polar liquid used is so great that the web is wet when initially formed on the collector. It may be possible, however, for no water to be present on the collector if, for example, the distance between the origin of the free-fiber and the collector is so great that the polar liquid dries while on the free-fiber rather than while on the collected web" (column 8, line 12), "The amount of polar liquid that is sprayed on the web may vary depending on the fiber production rates."

It is noted that Angadjivand proposes "spraying mechanisms 28, 30 may be used to spray a vapor of polar liquid such as **steam**, an atomized spray or mist of fine polar

liquid droplets", and does not expressly disclose the average diameter of the droplets is less than 20 microns.

Cinar discloses a droplet formation in steam flow wherein steam droplets are disclosed to have diameter size typically less than 20 microns (figure 6), and the droplet size depends on the applied pressure. The reference of Cinar is only relied on to teach a droplet formation in steam flow wherein steam droplets with diameter size typically less than 20 microns are conventionally formed in steam nozzles.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to expect the process of Angadjivand to include liquid droplets with average diameter of the droplets is less than 20 microns, since Angadjivand suggests steam is conventionally formed with liquid droplets with average diameter of the droplets is less than 20 microns.

Angadjivand discloses the fibers are dried only after collecting the free-fibers to form a nonwoven fibrous web.

It is noted that Angadjivand recommends a drying apparatus, however, willing to accept a partially dried fiber, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Angadjivand to turn off the drying device since Angadjivand teaches "the water spray was carried out as described for Example 1 except that the water pressure on the fluid cap was about 138 kPa (20 psi), and the air pressure on the air cap was about 414 kPa (60 psi). The reduction in water pressure reduced the total volume of water on the web to less than Example 1. Heat from the fibers caused a portion of the water to evaporate before

collection so that the collected nonwoven web was only **damp**" (column 15, line 57).

Angadjivand also teaches

"The drying mechanism 38 is shown located downstream from where the fibers 24 are collected—although it may be possible to dry the fibers before being collected (or both before and after being collected) to produce an electret web in accordance with the present invention. The drying mechanism may be an active drying mechanism, such as a heat source, a flow-through oven, a vacuum source, an air source such as a convective air source, a roller to squeeze the polar liquid from the web 25, or a combination of such devices. Alternatively, a passive drying mechanism—air drying at ambient temperatures—may be used to dry the web 25. Ambient air drying, however, may not be generally practical for high speed manufacturing operations. Essentially any device or operation suitable for drying the fibers and/or web is contemplated for use in this invention; unless the devices or operations were to somehow adversely impact the production of an electret" (column 9, line 45)

Angadjivand clearly teaches the drying is optional and is to be avoided when "devices or operations were to somehow adversely impact the production of an electret". Angadjivand also teaches "Known apparatuses have not employed a dryer because the quenching liquid apparently was used only in amounts sufficient to cool or quench the fibers and would passively dry by evaporation" (column 3, line 66). In claim 1, applicant did not claim any limitation which distinguishes his invention from an obvious modification of the cited prior art of record.

As to claim 3, it is noted Angadjivand does not expressly disclose the droplet versus fiber content, however, Angadjivand discloses "The polar liquid is sprayed on the fibers in quantities sufficient to constitute an "effective amount." That is, the polar liquid is contacted with the free-fibers in an amount sufficient to enable an electret to be produced using the process of the invention" As indicated above. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to spray the polar liquid on the fibers in quantities sufficient to constitute an "effective amount." That is, the polar liquid is contacted with the free-fibers in an amount sufficient to enable an electret to be produced using the process of the invention since Angadjivand teaches adjusting the liquid droplets content is necessary in order to obtain the desired results. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any relative amount of droplets versus fiber content including the amount claimed by the applicant in claim 3 since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

As to claim 4, Angadjivand discloses Cooperating gas orifices 23--through which a gaseous stream, typically heated air, is forced at high velocity--are positioned proximate die orifice 22 to assist in drawing the fiber-forming material through the orifice 22 (column 6, line 40).

As to claim 5-6, Angadjivand discloses "nonconductive" means possessing a volume resistivity of about 10.sup.14 ohm.cm or greater at room temperature (column 4, line 40). Angadjivand discloses a volume resistivity range that overlaps applicant's claimed range. Overlapping ranges are held obvious.

As to claim 10, Angadjivand discloses the apparatus comprising (1) a means for melt-extruding a thermoplastic resin containing electrical-chargeability enhancing agents to form thermoplastic resin fibers; (2) a means for spraying droplets consisting essentially of a polar liquid to a space downstream of a direction of said thermoplastic resin extruded from said means for melt-extruding a thermoplastic resin, to thereby form a mist space, the average diameter of said droplets being less than 20 μm ; and (3) a means for collecting said thermoplastic resin fibers which have been passed through said mist space.

Response to Arguments

4. Applicant's arguments filed 3/18/2010 have been fully considered but they are not persuasive in view of the fact that applicant's claims do not require a specific degree of dryness or wetness for the manufactured article rendering the newly added limitation of "no drying step" obvious over the prior art of record. The office action has been updated to address all of applicant's arguments.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MAHMOUD DAHIMENE** whose telephone number is (571)272-2410. The examiner can normally be reached on week days from 8:00 AM. to 5:00 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. D./
Examiner, Art Unit 1713

/Nadine G Norton/

Supervisory Patent Examiner, Art Unit 1713